**Α**1

# MOS FET Relays

# MOS FET Relay Series with 350-V Load Voltage

- Upgraded G3VM-2 Series.
- Continuous load current of 120 mA.
- Dielectric strength of 2,500 Vrms between I/O.
- Operating time of 0.3 ms (typical).
- RoHS Compliant.

#### Application Examples

- Measurement devices
- · Security systems
- Amusement machines

## List of Models

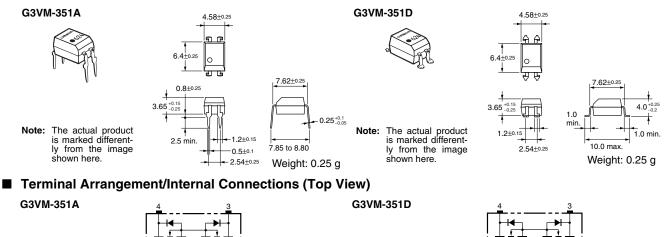


Note: The actual product is marked differently from the image shown here.

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	PCB terminals	350 VAC	G3VM-351A	100	
	Surface-mounting		G3VM-351D		
	terminals		G3VM-351D(TR)		1,500

## Dimensions

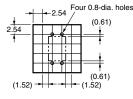
Note: All units are in millimeters unless otherwise indicated.





PCB Dimensions (Bottom View)

G3VM-351A





 Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-351D



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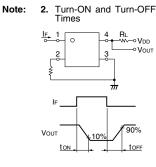
#### ■ Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	Rating	Unit	Measurement conditions	]
Input	LED forward current	I <sub>F</sub>	50	mA		Note
	Repetitive peak LED forward current	I <sub>FP</sub>	1	A	100 μs pulses, 100 pps	
	LED forward current reduction rate	$\Delta I_{F}^{/\circ}C$	-0.5	mA/°C	Ta ≥ 25°C	
	LED reverse voltage	V <sub>R</sub>	5	V		1
	Connection temperature	T <sub>j</sub>	125	°C		1
Output	Load voltage (AC peak/DC)	V <sub>OFF</sub>	350	V		1
	Continuous load current	I <sub>o</sub>	120	mA		1
	ON current reduction rate	$\Delta I_{ON} / ^{\circ}C$	-1.2	mA/°C	Ta ≥ 25°C	1
	Connection temperature	T <sub>j</sub>	125	°C		1
	ric strength between input and (See note 1.)	V <sub>I-O</sub>	2,500	V <sub>rms</sub>	AC for 1 min	
Operati	ing temperature	T <sub>a</sub>	-40 to +85	°C	With no icing or condensation	
Storage temperature		T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation	1
Soldering temperature (10 s)			260	°C	10 s	1

 The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

# ■ Electrical Characteristics (Ta = 25°C)

Item		Symbol	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions
Input	LED forward voltage	V <sub>F</sub>	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	I <sub>R</sub>			10	μA	V <sub>R</sub> = 5 V
	Capacity between terminals	CT		30		pF	V = 0, f = 1 MHz
	Trigger LED forward current	I <sub>FT</sub>		1	3	mA	l <sub>o</sub> = 120 mA
Output	Maximum resistance with output ON	R <sub>ON</sub>		25	35	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 120 mA, t < 1 s
				35	50	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 120 mA
	Current leakage when the relay is open	I <sub>LEAK</sub>		0.0015	1.0	μA	V <sub>OFF</sub> = 350 V
	Capacity between terminals	$C_{OFF}$		30		pF	V = 0, f = 1MHz
Capacit	y between I/O terminals	C <sub>I-O</sub>		0.8		pF	f = 1 MHz, V <sub>s</sub> = 0 V
Insulation resistance		R <sub>I-O</sub>	1,000			MΩ	$\begin{array}{l} V_{\text{I-O}} = 500 \ \text{VDC}, \\ R_{\text{oH}} \leq 60\% \end{array}$
Turn-ON time		t <sub>on</sub>		0.3	1.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega,$
Turn-OFF time		t <sub>OFF</sub>		0.1	1.0	ms	$V_{DD} = 20 V$ (See note 2.)



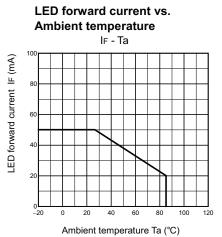
#### Recommended Operating Conditions

Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	V <sub>DD</sub>			280	V
Operating LED forward current	I <sub>F</sub>	5	7.5	25	mA
Continuous load current (AC peak/DC)	I <sub>o</sub>			100	mA
Operating temperature	T <sub>a</sub>	- 20		65	°C

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#### Engineering Data



Continuous load current vs.

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**On-state voltage** 

200

100

-100

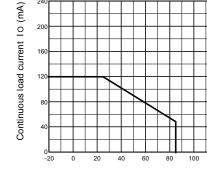
-200

30

Continuous load current IO (mA)

Ta = 25°C

 $I_F = 5 mA$ 

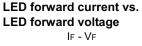


Ambient temperature Ta (°C)

Continuous load current vs.

lo - Ta

Ambient temperature



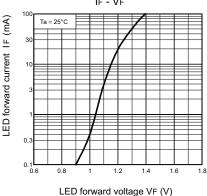
(mA)

Щ

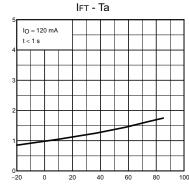
(mA)

Trigger LED forward current IFT

120

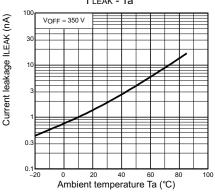


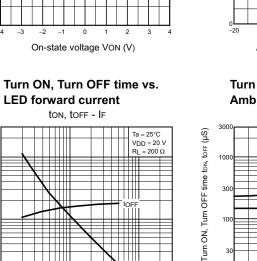
Trigger LED forward current vs. **Ambient temperature** 

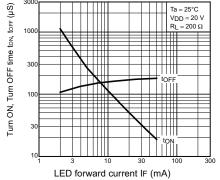


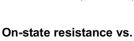
Ambient temperature Ta (°C)

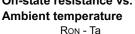
#### Current leakage vs. **Ambient temperature** I LEAK - Ta

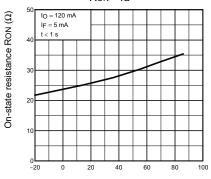












Ambient temperature Ta (°C)

#### Turn ON, Turn OFF time vs. Ambient temperature

ton, torr - Ta 1000 ton 300 100 lOF 30 Vnn = 20 V RL = 200 Ω IF = 5 mA10 -20 40 80 100 0 20 60 Ambient temperature Ta (°C)

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ALL DIMENSIONS SHOWN ARE IN MILLIMETERS. To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.



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